25X1

CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

COUNTRY	USSR (Sverdlovsk Oblast)/East Germany	REPORT	
SUBJECT	Uaz Light Metal Forging and Pressing Plant in Kamensk-Uralskiy	CD NO.	25X1
PLACE ACQUIRED		DATE DISTR.	16 August 1955
DATE OF INFO.		NO. OF PAGES	13
		NO. OF ENCLS. (LISTED BELOW)	25X1
		REFERENCES SUPPLEMENT TO REPORT NO.	25X1

25X1

THIS IS UNEVALUATED INFORMATION

25X1

Attached is [redacted] forwarded as received.

[redacted] Comments:

25X1

1. Uaz Light Metal Forging and Pressing Plant No. 268, also listed as Aircraft Parts Plant No. 268, and the nearby Uaz Aluminum Plant are components of the Kamensk-Uralskiy light metal industry, which includes a third factory in Uaz, No. 286, in the Sinarskaya section. 25X1

2. Uas should read Uaz throughout the report. Kamensk Uralsk shoud read Kamensk-Uralskiy. Aken, in paragraphs 16 and 23, should read Aachen. The Izet River, in paragraphs 39 through 41, should read Iset River.

3. The Institute of Technology mentioned in paragraph 8 is probably the TsIAM (Tsentralnyy nauchnoissledovatelskiy institut aviatsionnago motorostroyeniya imeni P.I. Baranova), the Central Scientific Research Institute of Aircraft Engine Building imeni P.I. Baranova.

4. Upravlencheskiy Plant No. 2 mentioned in paragraphs 11 and 28 is in Kuybyshev. According to available information, there is no Plant No. 195 in the Molotov area, as stated in paragraph 28; possibly Aircraft Engine Plant No. 19 or Aircraft Accessories Plant No. 33 is meant. Plant No. 30 referred to in paragraph 29 is the Osoaviakhim Aircraft Plant No. 30 in Moscow.

5. [redacted] which include plans of the Uaz area, the Uaz Light Metal Forging and Pressing Plant, and the Uaz Aluminum Plant, as well as sketches of various parts produced by the former plant, will be disseminated with appropriate legends [redacted] 25X1

25X1

CLASSIFICATION S-E-C-R-E-T

STATE	x	NAVY	x	NSRB		DISTRIBUTION
ARMY	x	AIR		FBI		

25X1

 25X1

CLASSIFICATION SECRET
NOFORN/CO

COUNTRY USSR REPORT

TOPIC Uas Light Metal Forging and Pressing Plant 25X1

EVALUATION [redacted] PLACE OBTAINED 25X1

DATE OF CONTENT

DATE OBTAINED ... PREPARED 3 June 1955 25X1

REFERENCES

PAGES 12 ENCLOSURES (NO. & TYPE) 11 - sketches with legends on ditto

REMARKS

This is UNEVALUATED Information 25X1

Dismantling of the Bitterfeld Plant.

1. The dismantling of the Bitterfeld Pressing Plant was started in March 1946.

2. Dismantled installations of Building 203 included:

25X1

a. Extrusion presses

two old 1,500-ton presses
1,000-ton press
750-ton extrusion press, type Eumuco, constructed in about 1936
350-ton extrusion press, type Eumuco, constructed in about 1936
1,200-ton tube extrusion press, Schloemann manufacture, built in 1943
3,500-ton tube extrusion press, Schloemann manufacture, built in 1935
two 1,000-ton tube extrusion presses, Hydraulik make

b. Forging presses

three-stage Eumuco type forging press with a pressure of 2,000/4,000/6,000 tons
650-ton gap frame (single-frame) forging press, Schloemann manufacture, built-in about 1936
300-ton forging press, Hydraulik make, built during World War I.

3. All presses were sufficiently equipped with electric preh[redacted]aces for light metal ingots etc and with installations to produce [redacted] (Presswasser). Delays occurred only with the dismantling [redacted]-stage 6,000-ton press and the 1,200 and 3,000-ton extrusion presses. Dismantling work on the 1,500-ton, 1,000-ton, 750-ton and 350-ton presses was finished by 25 March 1946. At the request of the department chief the Soviet management permitted that these presses[redacted]00-ton tube extrusion press with the pertinent furnaces and [redacted]enerators were left at the Bitterfeld plant. The dismantling [redacted] installations of Building

25X1

S-E-C-R-E-T

203 was continued and completed. In about July 1946, the presses were shipped to Kiev. No further information was obtained. Rumors heard at Kamensk Uralsk indicated that at least the 6,000-ton press had been reassembled and was in operation in Kiev.

4. The dismantled equipment of Building 207 included:

30,000-ton forging press, Schloemann manufacture, in operation since July 1943
15,000-ton forging press, Schloemann manufacture, in operation since 1938
2,000-ton forging press, Schloemann manufacture, built in 1940
1,000-ton Eumuco-type forging press
5,000-ton Eumuco-type extrusion press
1,250-ton friction press, manufactured by Maschinenfabrik Weingarten
about 3,000-ton hydraulic friction press, Eumuco make
325-ton trimming press, built by Maschinenfabrik Weingarten
8,000-mkg back pressure hammer, Eumuco make
3250-ton forging roll, type Eumuco.

5. There were enough furnaces and generators for pressure water available for these presses. Building 207 also housed the adjusting equipment of Building 207 and Building 203 which was first dismantled to obtain space for the dismantling work of the larger machines. Dismantling work on the 15,000-ton forging press and the 5,000-ton extrusion press was started on about 20 March 1946, and on the 30,000-ton forging press on 28 March 1946.

6. Serious difficulties were connected with the dismantling of the 5,000-ton extrusion press and the 30,000-ton forging press. Two years prior to the dismantling, the 5,000-ton press had already shown a crack in the cylinder yoke (Zylinderholm). To prevent the crack from growing larger a strap was welded over it. This had probably caused a distortion of the press which handicapped the dismantling. At first it was impossible to disassemble the pillars of the press. The problem was finally solved by boring (removing) the centering chucks (Zentrierschalen) which were inserted in the squeezing plate apertures (Pressholm Kanonen).(Pressholme - squeezing plates were the cross members at the foot and the head of a press to transmit the pressure on the work piece. Kanonen were the borings in these plates to hold the pillars which transmitted the traction between upper and lower squeezing plate). The difficulties involved with the dismantling of the pressure cylinders were probably also a result of the distortion. The cylinders were locked in the squeezing plate. Therefore, the entire upper squeezing plate with the stuck pressure cylinders had to be shipped in one piece by boat, because the dimensions exceeded the loading section of railroad cars. From Bitterfeld to Aken on the Elbe River the unit was shipped by a special railroad car. It was then loaded on a boat. No information was obtained on the route of this boat.

7. Similar difficulties were connected with the dismantling of the 30,000-ton forging press. The 8 pressing cylinders could not be removed from the squeezing plates, probably because the play between the cylinders and the squeezing plate was too small. The loading weight of one half of a squeezing plate with two cylinders was about 137 tons. The unit was loaded on special Reichsbahn transformer cars with a specially built center part and a carrying capacity of 160 tons. Each of these four special cars together with the car of the escorting personnel were pulled by one engine. These four trains carrying the 30,000-ton press travelled to Kamensk Uralsk at a speed of 10 km/h.

8. The shipping of the dismantled and mostly crated equipment from Building 203 and 207 started in late June / early July 1946 and was mostly completed by late August / early September. Twenty-seven trains each with 100 axles were needed to move the equipment to the USSR. The number of workmen employed for the dismantling at Bitterfeld varied widely up to 2,000 men. Soviet Lieutenant Kurzer (fnu), an engineer of Jewish descendents, supervised the dismantling activities at Bitterfeld. Kurzer was a member of the Ministry of Aviation Industry (MAP) and probably also belonged to the CIAM Institute of Technology. The steel frame of building 207 was dismantled in July 1946. The dismantling was apparently completed in April 1947. The 1,000-ton Eumoco-type forging press was the only equipment of Building 207 that was left at Bitterfeld. When the first railroad shipment with dismantled equipment left Bitterfeld, the destination was apparently still unknown. Individual parts of the 15,000-ton press were at first marked with "Moskay Komitee Saba (?)". while all the other shipments carried parts which were marked "Kamensk Uralsk".

Reassembling Work at Kamensk Uralsk.

9. Plant History. The Uas light metal forging and pressing plant was most probably constructed after 1939, either shortly before[1] or after the outbreak of hostilities between the USSR and Germany. In about 1951, the plant designation was changed from Zavod 168 to Zavod Post Box 4, Kamensk Uralsk. The aluminum works in Uas located in the immediate vicinity of the forging and pressing plant celebrated its tenth anniversary in 1949. The front wall of the sheetmetal rolling plant and extrusion pressing shop of the Uas plant carried the inscription 1942. It is believed that a second set of plant equipment for the Uas forging and pressing plant or, at least, parts had been received from the [redacted] USA. When in 1950, a pillar on a 10,000-ton forging press broke, this part a Mesta, USA fabrication, was very soon replaced by an identical piece which had allegedly come from the Moscow area. It was heard in conversations that a complete set of a second 10,000-ton press was being stored somewhere in the Moscow area.

10. The approximate time the press and other equipment needed for shipment from the USA might be determined from the following information: [redacted] Of the two sheet metal packing presses to be installed in the Uas Plant only one set arrived completely. Grinspun (fnu) (see part 28) stated that the shipment with those missing parts of the second press was sunk by a Japanese submarine. In April 1952, [redacted] prepare construction sketches of the missing parts. By November 1953, the castings and unfinished stampings had not yet arrived at Kamensk Uralsk to be finished and assembled at the Uas plant. Many crates with American inscriptions containing spare parts and accessories had been received with the plant equipment and were still stored in the plant area. Occasionally, when component parts were needed, the orders and the delivery records were checked. It was remembered that many of these American working sketches were dated 1941. 25X1

11. It was believed that the forge of the Uas plant was put into full operation after 1947/1948. [redacted] unfinished rotor discs for axial-flow turbines were received from the Uas plant. These unfinished parts had been forged without dies (Freiform-schmiedestuecke). Manager Nyepompshik (fnu) (phonetic spelling) visited Kamensk Uralsk to discuss these work orders. After his return, Nyepompshik stated that propeller blades, about 2.25 m long, maximum width about 30 cm, were being forged on a 5,000-ton press at the Uas plant. The output was about 50 blades per workshift. The 10,000-ton press was apparently not yet 25X1

in operation at that time. [redacted] the Uas forging and pressing plant in July 1949, the 10,000-ton press was already in operation producing these propeller blades, while the 5,000-ton press was only used for smaller work pieces. 25X1

Assembly Work of the Equipment from Bitterfeld.

12. In July 1949, when the German experts arrived at Kamensk Uralsk from Plant No 2 the entire equipment from Bitterfeld was stored in the plant area. A large workshop to house this equipment was under construction.

13. In the USSR assembly work of this large scale was carried out by an assembly trust rather than by the plant itself. The assembly work at the Uas plant was done by assembly trust No 8 in cooperation with construction trust No 20 (?). The assembly trust had only to assemble; the equipment had to be prepared for the assembly by the plant and, if required, had to be repaired or replaced. In case some work could not be done by the plant it would be turned over to the assembly trust and the plant would be charged for it.

14. At the Uas plant, former Bitterfeld Building 207 was enlarged by one longitudinal and one traverse wing. This was necessary as additional space was required to house the 12,000-ton tube extrusion press including its furnaces and other accessories from the Waren/Mueritz Branch Plant of the Dueren Metallwerke AG. In July 1949, the building was 30 percent completed and the steel girders and supports were being erected for the so-called 100-ton field which was to house the 30,000-ton press. The 100-ton crane required for the assembly of the press had also been dismantled at Bitterfeld. Assembly work had just begun on the pressing water generator of the 30,000-ton press and on the 12,000-ton tube extrusion press. The foundations of the 15,000-ton forging press were completed and those for the 5,000-ton extrusion press were still under construction.

15. Excavating work for the foundations of the 30,000-ton press was started in the fall of 1950, when the building was almost completed. Due to the condition of the building ground, the concrete foundations could be 1 m less deep than the ones of the Bitterfeld building which were 5 meters deep; The foundations were completed within four weeks which was much shorter than the time needed at Bitterfeld for the same work. After the completion, however, the pit proved to be insufficiently sealed against subsoil water which penetrated the foundation base. The Soviets solved this problem by putting a 15-cm concrete layer of very special quality on top of the foundation and 1 m high on the walls.

16. The assembling of the 30,000-ton press was started immediately after the concreting was completed in July 1951. No serious difficulties occurred. Because the crate containing the control unit and the pressure transmitter unit was, for unknown reasons, not included in the shipment, these component parts had to be manufactured at the Uas plant on the basis of construction records which had also been brought from Bitterfeld. Contrary to all rumors, the 30,00-tone press was definitely ready for operation in July 1951. Minor difficulties connected with the 100-ton crane and the electric unit of the press could soon be eliminated. At Bitterfeld two walking beam type furnaces with the air circulation manufactured by the Junkers Firm in Lammersdorf near Aken had been used to preheat the light metal to be processed by the 30,000-ton press. Each of the two furnaces was equipped with eight ventilation engines to effect the air circulation. The maximum heat of 500 centigrades was produced by resistances. At Bitterfeld the ventilator engines were occasionally defect, and when the press was dismantled, 8 to 16 engines were not in operation. These 8 engines were repaired at the Uas plant and were still in perfect operation in November 1953.

17. The assembling of the 15,000-ton forging press was started in the fall of 1949, and was not completed before the spring of 1951. The delay was primarily caused by the slow erection of the steel frame from Bitterfeld, and the urgent overhauling and repair work on the press. As a result of too heavy strain many important parts of the 15,00-ton press were badly worn. This had been brought to the Soviets attention already at Bitterfeld.

25X1

18. The major repair work required on the 15,00-ton press included:

Equalization of the contact surfaces of the pillar nut (Saeulenmutter) of the three-sectional lower squeezing plate
Equalization of the pillar nuts
Finishing of the contact surfaces between the middle and side sections of the lower squeezing plate
Planing of the moving table
Rearranging the buffers above the press to facilitate an easier repair of the filling valves.

Another sause of the delays was the supply of assembly timber. This special timber, used in combination with heavy hydraulic lifting jacks, and primarily used for letting down the lower squeezing plate into the construction pit, consisted of dry hardwood of high stability. In Germany, South American iron wood had been used for this purpose. The shipment finally arrived by air. The 800 pieces of square timber were 13 x 13 cm in diameter and 1 meter long.

19. After three weeks of operation, the middle plunger, a guide plunger, broke and was replaced by a German spare part. About three months later, two cylinder casings broke within a short period of time, reducing the pressing power to 5,000 tons. The press was not repaired in November 1953. The cylinder casings had been a serious problem already at Bitterfeld. Efforts made by the Schloemann Firm and Soviet engineers at Kamensk Uralsk to eliminate these defects have failed.

20. The 12,00-ton tube extrusion press of the Waren branch plant of the Duerener Metallwerke AG had yet not been in operation when it was dismantled at Waren. Various auxiliary equipment such as the conveyer for ingots, the swinging mechanism had to be manufactured at the Uas plant and in Sverdlovsk. No preheating furnace for ingots was available, probably because it had not yet been received by the Waren plant. The reassembly of the press at the Uas plant was hampered by unexperienced personnel who failed to mark the precise position of the longitudinal axles when mounting the squeezing plate and the front spar, which made the installation of the pull-back punching plunger impossible. In November 1953, the press was not ready for operation because some of the parts were not completed or had not been received because a pressing test had revealed that two cylinders were defect and had to be welded. These delays and extra salaries added to other [redacted] for faulty assembling work caused endless trouble at the plant. [redacted] so been the case with the 15,00-ton press. In 1950 the Soviets [redacted] design a preheating furnace which was under construction at the [redacted] The air circulation furnace was to be 20 meters long and about 4 meters wide which was about large enough for two lines of ingots, 1,800 mm long with a maximum diameter of 800 mm.

21. It was pointed out athat only one receiver for ingots with a diameter of 500 or 550 mm had been brought from Waren. Since the press, however, was designed for receivers with a maximum passage for ingots, 800 mm in diameter, the Soviets started to manufacture the required receivers tehthemselves. According to Soviet statements the heat resistant steel used for the receivers was of Soviet type 5 XMH (Cyrillic spelling : ZX - Chromium, M - manganese, H - nickel). The parts were to be forged in Sverdlovsk and to be finished at the Uas plant. If the Soviets would actually be capable to produce these receivers, they would at least need a long time for this project.

22. TheSoviets encountered serious difficulties solving manufacturing problems. The cutting device for pressing remainders which was composed of a cylinder, plunger and knife was not included in the shipment of the 12,000-ton extrusion press from Waren. In order to manufacture the missing part, a steel cylinder had to be cast. Compared to the dimensions of the press, this unit was comparatively small having a net weight of 5 tons. The first three castings were scrapped before the fourth attempt was finally successful.
Preparatory work at the foundry for the casting of light metal ingots up to 800 mm in diameter, through the extrusion process, had been started and was speeded up already in 1952. It is said that satisfactory results were soon obtained in these experiments.
Since the Soviets intended to use the 12,000-ton press for more purposes than the Germans had used it for, they ordered the designing of special accessories. In Germany the "direct or straight pressing method" was generally applied, while the USSR used a different system for the production of heavy rods with small degrees of deformation (Verpressungsgrade). The Soviet "Backward pressing method", produced not such a good surface but a higher homogeneity of the structure of the overall section.

23. [redacted]Eumoco-type extrusion press was erected and put into operation i[redacted]. Half a year later, the aforementioned crack in the yoke had become larger and the part had tobe replaced. A new yoke had already been ordered by the Bitterfeld Plant after the crack occurred. This yoke was cast by Witkowitzer Huette, but was not delivered by the end of the war. Instead of getting this yoke from Witkowitzer Huette, the Soviets ordered a new one from a steel foundry in Kramatorsk (located in the Donets Basin. The unit had yet not been received by November 1953. In July 1949, the double-deck type continuous heating furnace (circulating air) a manufacture of the Junker plant in Lammersdorf near Aken, was already in operation with another 5000--ton press. This other press, a Schloemann, USA manufacture, was setup in a different workshop andhad no own heating furnace.

24. The 2,000-ton forging press was shipped to Kazan in 1950/1951 and was apparently erected there.

General Information.

25. No new information was obtained on Soviet aircraft production. Compared to Western standards, most of the Soviet engineers were still on a rather low scientific level. There were many possibilities for education as well as technical literature for every level and on each subject. The technical libraries were probably better than those in Germany. Everyone had access to the plant library. It was frequently observed that young, however, talented students were persuaded to give up their technical carreer for politics. Most of the Soviet engineers were incapable of drawing correct construction sketches of complicated parts. Grinspun, stated, that [redacted]hieve a technical level between German precision and Ameri[redacted]

26. In the spring of 1953, 60 Chinese, among them about 6 women, were seen at the Uas plant. Their age was estimated between 25 and 30 years. Grinspun stated that they were to stay at the plant for one year before being assigned to key positions in a related plant in China which was to be equipped with Soviet machines. At the Uas plant they were assigned to various positions ranging between director, engineer, roller foreman, press supervisor, mechanic for power water generators in order to be trained for their future jobs. The Chinese often visited the plant library. They were still at the plant in November 1953. It is not known whether or not Chinese personnel was also assigned to the Aluminum Works in Uas.

Plant Personnel

27. The Uas Plant had a labor force of 800 to 1,000 persons including about 40 percent women and in addition 250 to 300 technical and commercial personnel. Work was done in three shifts.

28. Chief manager: Chipayeff (fnu) about 50, married, one son. He had started his carreer as a founder. Because of his high qualifications he was sent for further training to Germany in 1930. In 1933 when he could no longer stay in Germany, he went to the USA. Chipayeff was allegedly abroad for seven years. After his return to the USSR he was assigned to various foundries and related plants. He was not on[redacted] much skill in handling the dogma[redacted] manager. Since he was an expert [redacted] in good esteem with his superio[redacted]

Personnel manager: Shtanov (fnu)[redacted] 25X1

Chief engineer: Fedor Vasilyevich Tulyankin, [redacted]

Chief mechanic: Engineer Taranukhra (fnu). [redacted] 25X1

Chief engineer in charge of the assembly: Leo Yakoblovich Grinspun, [redacted]

Chief in charge of the assembly work carried out by trust 8: Lulayeff (fnu), [redacted] 25X1

German chief of assembly: Otto Sonntag,

Chief technologist: Arkadiy Andreyevich Lukonin,

Chief comptroller: Engineer Gregor Vassilyevich Tayanoff,

Chief metallurgist: Smolagin (fnu),

25X1

Chief of the forge: Fedor Fedorovich Andreyanoff,

Activities at the Uas Plant.

29. Sketches were prepared of various semifinished parts which were produced primarily at the forges of the Uas plant. All the parts seen were made of duraluminum. Magnesium alloys were presumably not used at the plant. The composition of the duraluminum alloys was unknown. In order to avoid the machine tool problem, the Soviets tended to keep the number as low as possible, while simultaneously increasing the output of forged products. Most of the various small parts forged at the Uas plant were delivered to Plant No 30 in Moscow.[2]

30. The Uas Plant was equipped wi[redacted]different machine tools for the production of various sizes o[redacted]blades. Almost during the entire period of observation the propeller blades forged at the plant were of one size having an all-over length of 3,000 mm (including the small rods for tensile tests) forged to the end of the blade) and a maximum width of about 325 mm. The blades were fitted with a Hamilton shaft. The monthly output was 4,000 to 6,000 units. Since only little adjustment work had to be done the adjustment department of the forge was able to fill the production quota without much effort. The expenditure of material, however, was considerably higher than in Germany, where, at the end of the war, propeller blades were forged with such a degree, of precisions, that only very little finishing work was required. The gross weight of an unfinished propeller

blade forged at the Uas plant was about 180 kg, while the same size of blade forged at Bitterfeld would have weighed about 100 kg. This system which was still applied by November 1953 was well suited for Soviet standards. With no experienced personnel available, the Soviets would not have been able of meeting the requirements of precision forging. The percentage of scrap would have been high. It was much easier for the Soviets to mill off the surplus material with automatic duplicating milling machines. Efforts were initiated, however, to gradually reduce the machining tolerances by adjusting the presses more precisely. After the 30,000-ton press was installed, propeller blades were forged on this machine.

31. In late May 1951, a Soviet engineer arrived from a plant located in the Ural Mountains or in Siberia with sketches of a propeller. The propeller blades differed in shape and dimensions from all other blades which were previously seen. About an experimental series of 20 such blades was produced and 20 additional blades were produced about half a year later. The blades were forged without dies. The problem of machine tools for the mass production of these propeller blades was already considered when the first production order was received.[3]

32. Conical

32. The development of a forging process for conical spars was started at Bitterfeld in 1944. Conical spars with a length of 6 meters were actually series produced at Bitterfeld by the end of the war, while the problem of forging 10-meter long spars could not be solved, in spite of the enormous efforts made. It was believed at that time that the forging process could eventually be mastered after the many series of experiments were completed. The actual production, however, would have brought up further problems caused by the lack of qualified personnel. Many German experts were replaced by foreign personnel at the end of the war.[4]

33. Efforts had been initiated at Bitterfeld, to find a new technically simpler and more economical way to realize the brilliant idea of forging conical spars so they could be almost ready for assembling. These experiments were made with two extrusion presses. Good results were obtained in preliminary experiments. The project was not completed by the end of the war. Another method to produce conical spars, developed at Bitterfeld involved special rolls which were designed for this process. A model was built and designing work for the construction was started. Practical experiments were never conducted.

34. When Bitterfeld was occupied by the Soviet Army, Soviet experts took a great interest in these activities and when the dismantling of the plant was started, Engineer Candidate Tarantoff (fnu) arrived from Moscow as specialist. All German experts of the Bitterfeld plant had to write detailed studies in which the conical spars were of great importance. All the machine tools, either completed or under construction, were shipped to the USSR. After the 30,000-[redacted] been established at the Uas plant, the production of coni[redacted] to be started with the dies from Bitterfeld. All special equip[redacted] were overhauled and supplemented, and the dies were polished. Being informed about the difficulties connected with this problem Soviet engineer Andriyanoff (fnu) finally refused to start this delicate project which, at that time, would have been a complete failure for many reasons. One of the reasons was the electric preheating system for dies which was generally applied at the Uas plant, would have been insufficient for such dimensions. Experiments might possibly have been started after November 1953. On Grinspun's suggestion a gas generating plant was allegedly to be constructed especially for the purpose of heating and keeping warm such large dies under the press as it had been done at Bitterfeld.

35. After April 1953 when the individual departments of the pressing plant became off limits to the Germans, information was obtained in occasional conversations with Soviet engineers. Sketches were repeatedly seen in the designing office of the Soviet chief technologist. The work pieces reproduced on these sketches were up to 5 meters long. These parts were just right for the 30,000-ton press. They were 150 to 200 mm wide and 80 to 100 mm high, and had an U-shaped profile with the sides becoming gradually shorter. These parts were possibly aircraft spars especially since they were conical. The strongest part was provided to be connected to other component parts such as "center parts" of wings.
These parts were not related to German designs. The profiles were comparatively thick.

36. In the fall of 1953, a "professor" from Moscow brought a picture of a new type of wing member. The picture was a photographic copy of a publication in an American magazine. The professor asked whether or not such parts had been produced in Bitterfeld and whether a method is known to produce these wing members. [redacted] the professor 25X1 discussed the subject with Andriyanoff, probably with the same result. Half a year later, an engineer candidate arrived from Moscow with an order by the ministry for the development of a production method of these wing members. The candidate, who obviously was entirely unfamiliar with forging techniques, probably collected material for his graduation. At first an experimental slab, 400 x 1,200 mm was to be forged.[5] A production method was discussed in various conferences attended by Andriyanoff, Lukonin, Takhanoff, the Moscow candidate [redacted] Tulyankin, Lukonin and the candidate decided 25X1 to apply a method which could be called a step-by-step forging process (Schritt-Schmiedeverfahren). Special tools were constructed for this project. Practical forging tests proved that the method might be quite useful. It was doubted, however, that it would be economical.

37. Questioned during the first conference, the candidate admitted that these rib slabs were wing members and added that they were designed for V-weapons. After successful experiments, these slabs were to be formed to airfoil sections in cold or warm processes. The candidate gave the various [redacted] dimensions for the slabs with the maximum length being 6 meters and the maximum width 1 or 2 meters.

38. When it was mentioned that there was Soviet literature on 50,000 to 60,000 ton forging presses, [redacted] the original publications would be of 25X1 great interest and might indicate the seriousness of such projects. According to Grinspun, the Soviet industry, status 1953, was capable of producting presses up to 9,000-ton compression. This was probably correct and it was believed that Soviet plants were sufficiently equipped for the molding, casting, forging and also the mahhining even of such large parts as required for 50,000 to 60,000-ton presses. The Soviet industry was severely hampered by a lack of experienced designers, engineers and skilled plant personnel in carrying out such a project. No inexperienced Soviet expert would risk to take the responsibility connected with such a project. The request for the production of 50,000 to 60,000-ton presses was, for these reasons, considered an Utopian idea of theorists, who were unaware of the problems and difficulties arising with forging presses of that size and which did not occur with 8,000 to 10,000-ton presses. It was well possible, however, that the Soviets published articles on 50,000 to 60,000-ton presses for the purpose of attracting the attentions of the West who consequently might start to produce these presses themselves. In that case Moscow would wait for these presses to be completed, and it would try to obtain all the desired designing characteristics, dimensions and all other data either by espionage or primarily from the details published in American technical literature.[6]

Geographical Information on the Kamensk Uralsk Area.

39. Except for the Uas light metal forging and pressing plant no important objects were seen in the Kamensk Uralsk area. Because of the danger involved and also because of the poor climatic conditions - short very hot summers and seven months winter of extreme coldness, snow and mud periods - the area was not inviting. The landscape is hilly. The Izet River, about 100 m wide, flows slowly from west to east, partly through a very deep gorge which extended to the entry into the Kamenka River. The steep gorge of the river has a maximum depth of 20 meters and is formed by almost vertical rocks. The northern bank of the river is steep and extends as far as the end of the S curve downstream of the reservoir near the aluminum works. From downstream toward the reservoir, the southern river bank becomes gradually flat.

40. The lock which has dammed in the Izet river to a narrow reservoir, about 500 meters long, is located east of the S curve. It was believed that this dam had existed previously; it was heightened in 1951 to raise the water level of the Izet river about 2 to 2.5 meters. This measure had become necessary because the mud from the sewage of the aluminum works had settled during the years and had produced a large bank hampering the water supply of the power plant and the aluminum works. Since it was feared that the held back water might endanger the wooden pillars of the railroad bridge west of the reservoir, the bridge was dismantled before the reservoir was made. This was done during the winter when the ice of the river allowed a better access to the bridge. The railroad line has been interupted ever since.

41. The Uas town and the power plant are located about 10 meters above the water level of the Izet River at the aluminum works; the forging and pressing plant is located about 20 meters above this water level and the highway north of the River is about 20 to 25 above it. The entire area has many gorges and valleys. A densely wooded area, mostly of firs, extends between the Izet River and the highway located in the north as far as the Kamenka River. Grain and potatoe fields. are located north of the highway and in the area west of the Kamenka River.

42. Kamensk Uralsk is a typical old Russian insignificant town consisting mostly of wooded houses and only some few brick buildings. Uas, a district of Kamensk Uralsk, has a population of 35,000 to 40,000. Letters received from there mentioned that Uas has grown considerably since November 1951.

1. [redacted] Comment. For a location and layout sketch of Kamensk Uralsk with Uas Light Metal Forging and Pressing Plant, see Annex 1. For a layout sketch of the sheet rolling plant and the extrusion plant, see Annex 2. For a layout sketch of the old forge, see Annex 3 and for a sketch of the new forge, see Annex 4. 25X1

2. [redacted] Comment. For a sketch of the unfinished compressor wheel, see Annex 5. For sketches of aircraft spars and so-called collectors, see Annex 6. For sketches of unfinished compressor wheel and guide vanes and frame members, see Annex 7. For sketches of unfinished compressor wheels and a frame member, see Annex 8. 25X1

3. [redacted] Comment. For a sketch of the experimetal propeller blades, see Annex 9. 25X1

4. [redacted] Comment. For conical spars forged at Bitterfeld, see Annex 10.

5. Comment. For rib,plates, see Annex 11.

6. Comment. [redacted] clarify the following points: 25X1 25X1

a. The time the individual parts were produced.

b. How long were the individual parts being produced, i.e. how many units were completed. The present report only gives the production capacity.

c. What were the production specifications, and how high the scrap to finished product ratio.

d. Which material was being processed, what sort of thermal treatment was applied.

e. Which information was obtained in personal observation and what was learned in conversations with other persons.

[redacted] 25X1

 25X1

CLASSIFICATION S-E-C-R-E-T [redacted]

CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

REPORT [redacted]

CD NO. 25X1

COUNTRY	USSR (Sverdlovsk Oblast)/East Germany	DATE DISTR.	16 August 1955
SUBJECT	Uaz Light Metal Forging and Pressing Plant in Kamensk-Uralskiy	NO. OF PAGES	13
PLACE ACQUIRED	[redacted]	NO. OF ENCLS. (LISTED BELOW)	25X1
DATE OF INFO.		SUPPLEMENT TO REPORT NO.	[redacted]

REFERENCES

25X1

THIS DOCUMENT CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES, WITHIN THE MEANING OF TITLE 18, SECTIONS 793 AND 794, OF THE U. S. CODE, AS AMENDED. ITS TRANSMISSION OR REVELATION OF ITS CONTENTS TO OR RECEIPT BY AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW. THE REPRODUCTION OF THIS FORM IS PROHIBITED.

THIS IS UNEVALUATED INFORMATION

25X1

[redacted]

Attached is [redacted] forwarded as received. 25X1

[redacted] Comments:

1. Uaz Light Metal Forging and Pressing Plant No. 268, also listed as Aircraft Parts Plant No. 268, and the nearby Uaz Aluminum Plant are components of the Kamensk-Uralskiy light metal industry, which includes a third factory in Uaz, No. 286, in the Sinarskaya section. 25X1

2. Uas should read Uaz throughout the report. Kamensk Uralsk shoud read Kamensk-Uralskiy. Aken, in paragraphs 16 and 23, should read Aachen. The Izet River, in paragraphs 39 through 41, should read Iset River.

3. The Institute of Technology mentioned in paragraph 8 is probably the TsIAM (Tsentralnyy nauchnoissledovatelskiy institut aviatsionnago motorostroyeniya imeni P.I. Baranova), the Central Scientific Research Institute of Aircraft Engine Building imeni P.I. Baranova.

4. Upravlencheskiy Plant No. 2 mentioned in paragraphs 11 and 28 is in Kuybyshev. According to available information, there is no Plant No. 195 in the Molotov area, as stated in paragraph 28; possibly Aircraft Engine Plant No. 19 or Aircraft Accessories Plant No. 33 is meant. Plant No. 30 referred to in paragraph 29 is the Osoaviakhim Aircraft Plant No. 30 in Moscow.

5. [redacted] which include plans of the Uaz area, the Uaz Light Metal Forging and Pressing Plant, and the Uaz Aluminum Plant, as well as sketches of various parts produced by the former plant, will be disseminated with appropriate legends [redacted] 25X1

25X1

CLASSIFICATION S-E-C-R-E-T [redacted]

STATE	x	NAVY	x	NSRB		DISTRIBUTION				
ARMY	x	AIR	x	FBI						

25X1

25X1

CLASSIFICATION [redacted]

COUNTRY USSR REPORT [redacted]

TOPIC Uas Light Metal Forging and Pressing Plant 25X1

25X1

EVALUATION [redacted] PLACE OBTAINED [redacted] 25X1

DATE OF CONTENT [redacted] 25X1

DATE OBTAINED [redacted] DATE PREPARED 3 June 1955

REFERENCES

PAGES 12 ENCLOSURES (NO. & TYPE) 11 - sketches with legends on ditto

REMARKS

This is UNEVALUATED Information

[redacted]

25X1

Dismantling of the Bitterfeld Plant. 25X1

1. The dismantling of the Bitterfeld Pressing Plant was started in March 1946. [redacted]

2. Dismantled installations of Building 203 included:

a. Extrusion presses

two old 1,500-ton presses
1,000-ton press
750-ton extrusion press, type Eumuco, constructed in about 1936
350-ton extrusion press, type Eumuco, constructed in about 1936
1,200-ton tube extrusion press, Schloemann manufacture, built in 1943
3,500-ton tube extrusion press, Schloemann manufacture, built in 1935
two 1,000-ton tube extrusion presses, Hydraulik make

b. Forging presses

three-stage Eumuco type forging press with a pressure of 2,000/4,000/6,000 tons
650-ton gap frame (single-frame) forging press, Schloemann manufacture, built-in about 1936
300-ton forging press, Hydraulik make, built during World War I.

3. All presses were sufficiently equipped with electric preheating furnaces for light metal ingots etc and with installations to produce water power (Presswasser). Delays occurred only with the dismantling of the three-stage 6,000-ton press and the 1,200 and 3,000-ton extrusion presses. Dismantling work on the 1,500-ton, 1,000-ton, 750-ton and 350-ton presses was finished by 25 March 1946. At the request of the department chief the Soviet management permitted that these presses and the 3,000-ton tube extrusion press with the pertinent furnaces and water power generators were left at the Bitterfeld plant. The dismantling of the other installations of Building

CLASSIFICATION S-E-C-R-E-T [redacted]

DISTRIBUTION

25X1

203 was continued and completed. In about July 1946, the presses were shipped to Kiev. No further information was obtained. Rumors heard at Kamensk Uralsk indicated that at least the 6,000-ton press had been reassembled and was in operation in Kiev.

4. The dismantled equipment of <u>Building 207</u> included:

30,000-ton forging press, Schloemann manufacture, in operation since July 1943
15,000-ton forging press, Schloemann manufacture, in operation since 1938
2,000-ton forging press, Schloemann manufacture, built in 1940
1,000-ton Eumuco-type forging press
5,000-ton Eumuco-type extrusion press
1,250-ton friction press, manufactured by Maschinenfabrik Weingarten
about 3,000-ton hydraulic friction press, Eumuco make
325-ton trimming press, built by Maschinenfabrik Weingarten
8,000-mkg back pressure hammer, Eumuco make
3250-ton forging roll, type Eumuco.

5. There were enough furnaces and generators for pressure water available for these presses. Building 207 also housed the adjusting equipment of Building 207 and Building 203 which was first dismantled to obtain space for the dismantling work of the larger machines. Dismantling work on the 15,000-ton forging press and the 5,000-ton extrusion press was started on about 20 March 1946, and on the 30,000-ton forging press on 28 March 1946.

6. Serious difficulties were connected with the dismantling of the 5,000-ton extrusion press and the 30,000-ton forging press. Two years prior to the dismantling, the 5,000-ton press had already shown a crack in the cylinder yoke (Zylinderholm). To prevent the crack from growing larger a strap was welded over it. This had probably caused a distortion of the press which handicapped the dismantling. At first it was impossible to disassemble the pillars of the press. The problem was finally solved by boring (removing) the centering chucks (Zentrierschalen) which were inserted in the squeezing plate apertures (Pressholm Kanonen). (Pressholme = squeezing plates were the cross members at the foot and the head of a press to transmit the pressure on the work piece. Kanonen were the borings in these plates to hold the pillars which transmitted the traction between upper and lower squeezing plate). The difficulties involved with the dismantling of the pressure cylinders were probably also a result of the distortion. The cylinders were locked in the squeezing plate. Therefore, the entire upper squeezing plate with the stuck pressure cylinders had to be shipped in one piece by boat, because the dimensions exceeded the loading section of railroad cars. From Bitterfeld to Aken on the Elbe River the unit was shipped by a special railroad car. It was then loaded on a boat. No information was obtained on the route of this boat.

7. Similar difficulties were connected with the dismantling of the 30,000-ton forging press. The 8 pressing cylinders could not be removed from the squeezing plates, probably because the play between the cylinders and the squeezing plate was too small. The loading weight of one half of a squeezing plate with two cylinders was about 137 tons. The unit was loaded on special Reichsbahn transformer cars with a specially built center part and a carrying capacity of 160 tons. Each of these four special cars together with the car of the escorting personnel were pulled by one engine. These four trains carrying the 30,000-ton press travelled to Kamensk Uralsk at a speed of 10 km/h.

8. The shipping of the dismantled and mostly crated equipment from Building 203 and 207 started in late June / early July 1946 and was mostly completed by late August / early September. Twenty-seven trains each with 100 axles were needed to move the equipment to the USSR. The number of workmen employed for the dismantling at Bitterfeld varied widely up to 2,000 men. Soviet Lieutenant Kurzer (fnu), an engineer of Jewish descendents, supervised the dismantling activities at Bitterfeld. Kurzer was a member of the Ministry of Aviation Industry (MAP) and probably also belonged to the CIAM Institute of Technology. The steel frame of building 207 was dismantled in July 1946. The dismantling was apparently completed in April 1947. The 1,000-ton Eumocc type forging press was the only equipment of Building 207 that was left at Bitterfeld. When the first railroad shipment with dismantled equipment left Bitterfeld, the destination was apparently still unknown. Individual parts of the 15,000-ton press were at first marked with "Moskay Komitee Saba (?)". while all the other shipments carried parts which were marked "Kamensk Uralsk".

<u>Reassembling Work at Kamensk Uralsk</u>.

9. <u>Plant History</u>. The Uas light metal forging and pressing plant was most probably constructed after 1939, either shortly before or after the outbreak of hostilities between the USSR and Germany. [1] In about 1951, the plant designation was changed from Zavod 168 to Zavod Post Box 4, Kamensk Uralsk. The aluminum works in Uas located in the immediate vicinity of the forging and pressing plant celebrated its tenth anniversary in 1949. The front wall of the sheetmetal rolling plant and extrusion pressing shop of the Uas plant carried the inscription 1942. It is believed that a second set of plant equipment for the Uas forging and pressing plant or, at least, parts had been received from the USA. When in 1950, a pillar on a 10,000-ton forging press broke, this part a Mesta, USA fabrication, was very soon replaced by an identical piece which had allegedly come from the Moscow area. It was heard in conversations that a complete set of a second 10,000-ton press was being stored somewhere in the Moscow area.

10. The approximate time the press and other equipment needed for shipment from the USA might be determined from the following information: Of the two sheet metal packing presses to be installed in the Uas Plant only one set arrived complete . Grinspun (fnu) (see para 28) stated that the shipment with those missing parts of the second press was sunk by a Japanese submarine. In April 1952, [redacted] prepare construction sketches 25X1 of the missing parts. By November 1953, the castings and unfinished stampings had not yet arrived at Kamensk Uralsk to be finished and assembled at the Uas plant. Many crates with American inscriptions containing spare parts and accessories had been received with the plant equipment and were still stored in the plant area. Occasionally, when component parts were needed, the orders and the delivery records were checked. It was remembered that many of these American working sketches were dated 1941.

11. It was believed that the forge of the Uas plant was put into full operation after 1947/1948. [redacted] 25X1 unfinished rotor discs for axial-flow turbines were received from the Uas plant. These unfinished parts had been forged without dies (Freiformschmiedestuecke). Manager Nyepompshik (fnu) (phonetic spelling) visited Kamensk Uralsk to discuss these work orders. After his return, Nyepompshik stated that propeller blades, about 2.25 m long, maximum width about 30 cm, were being forged on a 5,000-ton press at the Uas plant. The output was about 50 blades per workshift. The 10,000-ton press was apparently not yet

[redacted] 25X1

in operation at that time. [redacted] the Uas forging and pressing plant in July 1949, the 10,000-ton press was already in operation producing these propeller blades, while the 5,000-ton press was only used for smaller work pieces. 25X1

Assembly Work of the Equipment from Bitterfeld.

12. In July 1949, when the German experts arrived at Kamensk Uralsk from Plant No 2 the entire equipment from Bitterfeld was stored in the plant area. A large workshop to house this equipment was under construction.

13. In the USSR assembly work of this large scale was carried out by an assembly trust rather than by the plant itself. The assembly work at the Uas plant was done by assembly trust No 8 in cooperation with the construction trust No 20 (?). The assembly trust had only to assemble; the equipment had to be prepared for the assembly by the plant and, if required, had to be repaired or replaced. In case some work could not be done by the plant it would be turned over to the assembly trust and the plant would be charged for it.

14. At the Uas plant, former Bitterfeld Building 207 was enlarged by one longitudinal and one traverse wing. This was necessary as additional space was required to house the 12,000-ton tube extrusion press including its furnaces and other accessories from the Waren/Mueritz Branch Plant of the Dueren Metallwerke. In July 1949, the building was 30 percent completed and the steel girders and supports were being erected for the so-called 100-ton field which was to house the 30,000-ton press. The 100-ton crane required for the assembly of the press had also been dismantled at Bitterfeld. Assembly work had just begun on the pressing water generator of the 30,000-ton press and on the 12,000-ton tube extrusion press. The foundations of the 15,000-ton forging press were completed and those for the 5,000-ton extrusion press were still under construction.

15. Excavation work for the foundations of the 30,000-ton press was started in the fall of 1950, when the building was almost completed. Due to the condition of the building ground, the concrete foundations could be 1 m less deep than the ones of the Bitterfeld building which were 5 meters deep. The foundations were completed within four weeks which was much shorter than the time needed at Bitterfeld for the same work. After the completion, however, the pit proved to be insufficiently sealed against subsoil water which penetrated the foundation base. The Soviets solved this problem by putting a 15-cm concrete layer of very special quality on top of the foundation and 1 m high on the walls.

16. The assembling of the 30,000-ton press was started immediately after the concreting was completed in July 1951. No serious difficulties occurred. Because the crate containing the control unit and the pressure transmitter unit was, for unknown reasons, not included in the shipment, these component parts had to be manufactured at the Uas plant on the basis of construction records which had also been brought from Bitterfeld. Contrary to all rumors, the 30,00-ton press was definitely ready for operation in July 1951. Minor difficulties connected with the 100-ton crane and the electric unit of the press could soon be eliminated. At Bitterfeld two walking beam type furnaces with the air circulation manufactured by the Junkers Firm in Lammersdorf near Aken had been used to preheat the light metal to be processed by the 30,000-ton press. Each of the two furnaces was equipped with eight ventilation engines to effect the air circulation. The maximum heat of 500 centigrades was produced by resistance . At Bitterfeld the ventilator engines were occasionally defect, and when the press was dismantled, 8 to 16 engines were not in operation. These 8 engines were repaired at the Uas plant and were still in perfect operation in November 1953.

[redacted] 25X1

17. The assembling of the 15,000-ton forging press was started in the fall of 1949, and was not completed before the spring of 1951. The delay was primarily caused by the slow erection of the steel frame from Bitterfeld, and the urgent overhauling and repair work on the press. As a result of too heavy strain many important parts of the 15,00-ton press were badly worn. This had been brought to the Soviets attention already at Bitterfeld.

25X1

18. The major repair work required on the 15,00-ton press included:

Equalization of the contact surfaces of the pillar nut (Saeulenmutter) of the three-sectional lower squeezing plate
Equalization of the pillar nuts
Finishing of the contact surfaces between the middle and side sections of the lower squeezing plate
Planing of the moving table
Rearranging the buffers above the press to facilitate an easier repair of the filling valves.

Another cause of the delays was the supply of assembly timber. This special timber, used in combination with heavy hydraulic lifting jacks, and primarily used for letting down the lower squeezing plate into the construction pit, consisted of dry hardwood of high stability. In Germany, South American iron wood had been used for this purpose. The shipment finally arrived by air. The 800 pieces of square timber were 13 x 13 cm in diameter and 1 meter long.

19. After three weeks of operation, the middle plunger, a guide plunger, broke and was replaced by a German spare part. About three months later, two cylinder casings broke within a short period of time, reducing the pressing power to 5,000 tons. The press was not repaired in November 1953. The cylinder casings had been a serious problem already at Bitterfeld. Efforts made by the Schloemann Firm and Soviet engineers at Kamensk Uralsk to eliminate these defects have failed.

20. The 12,00-ton tube extrusion press of the Waren branch plant of the Duerener Metallwerke had yet not been in operation when it was dismantled at Waren. Various auxiliary equipment such as the conveyer for ingots, the swinging mechanism had to be manufactured at the Uas plant and in Sverdlovsk. No preheating furnace for ingots was available, probably because it had not yet been received by the Waren plant. The reassembly of the press at the Uas plant was hampered by inexperienced personnel who failed to mark the precise position of the longitudinal axles when mounting the squeezing plate and the front spar, which made the installation of the pull-back punching plunger impossible. In November 1953, the press was not ready for operation because some of the parts were not completed or had not been received because a pressing test had revealed that two cylinders were defect and had to be welded. These delays and extra salaries added to other expenses for faulty assembling work caused endless trouble at the plant. This had also been the case with the 15,00-ton press. In 1950 the Soviets started to design a preheating furnace which was under construction at the Uas plant. The air circulation furnace was to be 20 meters long and about 4 meters wide which was about large enough for two lines of ingots, 1,800 mm long with a maximum diameter of 800 mm.

21. It was pointed out that only one receiver for ingots with a diameter of 500 or 550 mm had been brought from Waren. Since the press, however, was designed for receivers with a maximum passage for ingots, 800 mm in diameter, the Soviets started to manufacture the required receivers themselves. According to Soviet statements the heat resistant steel used for the receivers was of Soviet type 5 XMH (Cyrillic spelling : X = chromium, M = manganese, H = nickel). The parts were to be forged in Sverdlovsk and to be finished at the Uas plant. If the Soviets would actually be capable to produce these receivers, they would at least need a long time for this project.

22. TheSoviets encountered serious difficulties solving manufacturing problems. The cutting device for pressing remainders which was composed of a cylinder, plunger and knife was not included in the shipment of the 12,000-ton extrusion press from Waren. In order to manufacture the missing part, a steel cylinder had to be cast. Compared to the dimensions of the press, this unit was comparatively small having a net weight of 5 tons. The first three castings were scrapped before the fourth attempt was finally successful.
Preparatory work at the foundry for the casting of light metal ingots up to 800 mm in diameter, through the extrusion process, had been started and was speeded up already in 1952. It is said that satisfactory results were soon obtained in these experiments.
Since the Soviets intended to use the 12,000-ton press for more purposes than the Germans had used it for, they ordered the designing of special accessories. In Germany the "direct or straight pressing method" was generally applied, while the USSR used a different system for the production of heavy rods with small degrees of deformation (Verpressungsgrade). The Soviet "Backward pressing method", produced not such a good surface but a higher homogeneity of the structure of the overall section.

23. The 5000-ton Eumoco-type extrusion press was erected and put into operation in early 1951. Half a year later, the aforementioned crack in the yoke had become larger and the part had tobe replaced. A new yoke had already been ordered by the Bitterfeld Plant after the crack occurred. This yoke was cast by Witkowitzer Huette, but was not delivered by the end of the war. Instead of getting this yoke from Witkowitzer Huette, the Soviets ordered a new one from a steel foundry in Kramatorsk located in the Donets Basin. The unit had yet not been received by November 1953. In July 1949, the double-deck type continuous heating furnace (circulating air) a manufacture of the Junker plant in Lammersdorf near Aken, was already in operation with another 5000--ton press. This other press, a Schloemann, USA manufacture, was setup in a different workshop andhad no own heating furnace.

24. The 2,000-ton forging press was shipped to Kazan in 1950/1951 and was apparently erected there.

General Information.

25. No new information was obtained on Soviet aircraft production. Compared to Western standards, most of the Soviet engineers were still on a rather low scientific level. There were many possibilities for education as well as technical literature for every level and on each subject. The technical libraries were probably better than those in Germany. Everyone had access to the plant library. It was frequently observed that young, however, talented students were persuaded to give up their technical car eer for politics. Most of the Soviet engineers were incapable of drawing correct construction sketches of complicated parts. Grinspun,stated, that the USSR tended to achieve a technical level between German precision and American "unconstraint".

SECRET
[redacted] 25X1

26. In the spring of 1953, 60 Chinese, among them about 6 women, were seen at the Uas plant. Their age was estimated between 25 and 30 years. Grinspun stated that they were to stay at the plant for one year before being assigned to key positions in a related plant in China which was to be equipped with Soviet machines. At the Uas plant they were assigned to various positions ranging between director, engineer, roller foreman, press supervisor, mechanic for power water generators in order to be trained for their future jobs. The Chinese often visited the plant library. They were still at the plant in November 1953. It is not known whether or not Chinese personnel was also assigned to the Aluminum Works in Uas.

Plant Personnel

27. The Uas Plant had a labor force of 800 to 1,000 persons including about 40 percent women and in addition 250 to 300 technical and commercial personnel. Work was done in three shifts.

28. Chief manager: Chipayeff (fnu) about 50, married, one son. He had started his car eer as a founder. Because of his high qualifications he was sent for further training to Germany in 1930. In 1933 when he could no longer stay in Germany, he went to the USA. Chipayeff was allegedly abroad for seven years. After his return to the USSR he was assigned to various foundries and related plants. He was not only a noted technical expert but also showed much skill in handling the dogmatics of Soviet economy and was an experienced manager. Since he was an expert in the technique of planfilling, he was in good esteem with his superiors. He does not treat his subordinates badly.

Personnel manager: Shtanov (fnu). [redacted] 25X1

Chief engineer: Fedor Vasilyevich Tulyankin, [redacted]

Chief mechanic: Engineer Taranukhra (fnu), [redacted]

Chief engineer in charge of the assembly: Leo Yakoblovich Grinspun. [redacted]

Chief in charge of the assembly work carried out by trust 8: Lulayeff (fnu) [redacted]

SECRET .
[redacted] 25X1

German chief of assembly: Otto Sonntag. [redacted] 25X1

Chief technologist: Arkadiy Andreyevich Lukonin, [redacted]

Chief comptroller: Engineer Gregor Vassilyevich Tayanoff, [redacted]

Chief metallurgist: Smolagin (fnu), [redacted]

Chief of the forge: Fedor Fedorovich Andreyanoff, [redacted]

Activities at the Uas Plant.

29. Sketches were prepared of various semifinished parts which were produced primarily at the forges of the Uas plant. All the parts seen were made of duraluminum. Magnesium alloys were presumably not used at the plant. The composition of the duraluminum alloys was unknown. In order to avoid the machine tool problem, the Soviets tended to keep the number as low as possible, while simultaneously increasing the output of forged products. Most of the various small parts forged at the Uas plant were delivered to Plant No 30 in Moscow.[2]

30. The Uas Plant was equipped with about 10 different machine tools for the production of various sizes of propeller blades. Almost during the entire period of observation the propeller blades forged at the plant were of one size having an all-over length of 3,000 mm (including the small rods for tensile tests forged to the end of the blade) and a maximum width of about 325 mm. The blades were fitted with a Hamilton shaft. The monthly output was 4,000 to 6,000 units. Since only little adjustment work had to be done the adjustment department of the forge was able to fill the production quota without much effort. The expenditure of material, however, was considerably higher than in Germany, where, at the end of the war, propeller blades were forged with such a degree of precision, that only very little finishing work was required. The gross weight of an unfinished propeller

SECRET

25X1

blade forged at the Uas plant was about 180 kg, while the same size of blade forged at Bitterfeld would have weighed about 100 kg. This system which was still applied by November 1953 was well suited for Soviet standards. With no experienced personnel available, the Soviets would not have been able of meeting the requirements of precision forging. The percentage of scrap would have been high. It was much easier for the Soviets to mill off the surplus material with automatic duplicating milling machines. Efforts were initiated, however, to gradually reduce the machining tolerances by adjusting the presses more precisely. After the 30,000-ton press was installed, propeller blades were forged on this machine.

31. In late May 1951, a Soviet engineer arrived from a plant located in the Ural Mountains or in Siberia with sketches of a propeller. The propeller blades differed in shape and dimensions from all other blades which were previously seen. About an experimental series of 20 such blades was produced and 20 additional blades were produced about half a year later. The blades were forged without dies. The problem of machine tools for the mass production of these propeller blades, was already considered when the first production order was received.[3]

Conical

32. The development of a forging process for conical spars was started at Bitterfeld in 1944. Conical spars with a length of 6 meters were actually series produced at Bitterfeld by the end of the war, while the problem of forging 10-meter long spars could not be solved, in spite of the enormous efforts made. It was believed at that time that the forging process could eventually be mastered after the many series of experiments were completed. The actual production, however, would have brought up further problems caused by the lack of qualified personnel. Many German experts were replaced by foreign personnel at the end of the war.[4]

33. Efforts had been initiated at Bitterfeld, to find a new technically simpler and more economical way to realize the brilliant idea of forging conical spars so they could be almost ready for assembling. These experiments were made with two extrusion presses. Good results were obtained in preliminary experiments. The project was not completed by the end of the war. Another method to produce conical spars, developed at Bitterfeld involved special rolls which were designed for this process. A model was built and designing work for the construction was started. Practical experiments were never conducted.

34. When Bitterfeld was occupied by the Soviet Army, Soviet experts took a great interest in these activities and when the dismantling of the plant was started, Engineer Candidate Tarantcff (fnu) arrived from Moscow as specialist. All German experts of the Bitterfeld plant had to write detailed studies in which the conical spars were of great importance. All the machine tools either completed or under construction were shipped to the USSR. After the 30,000-ton press had been established at the Uas plant, the production of conical spars was to be started with the dies from Bitterfeld. All special equipment and tools were overhauled and supplemented, and the dies were polished. Being informed about the difficulties connected with this problem Soviet engineer Andriyanoff (fnu) finally refused to start this delicate project which, at that time, would have been a complete failure for many reasons. One of the reasons was the electric preheating system for dies which was generally applied at the Uas plant, would have been insufficient for such dimensions. Experiments might possibly have been started after November 1953. On Grinspun's suggestion a gas generating plant was allegedly to be constructed especially for the purpose of heating and keeping warm such large dies under the press as it had been done at Bitterfeld.

SECRET -

25X1

35. After April 1953 when the individual departments of the pressing plant became off limits to the Germans, information was obtained in occasional conversations with Soviet engineers. Sketches were repeatedly seen in the designing office of the Soviet chief technologist. The work pieces reproduced on these sketches were up to 5 meters long. These parts were just right for the 30,000-ton press. They were 150 to 200 mm wide and 80 to 100 mm high, and had a U-shaped profile with the sides becoming gradually shorter. These parts were possibly aircraft spars especially since they were conical. The strongest part was provided to be connected to other component parts such as "center parts" of wings.
These parts were not related to German designs. The profiles were comparatively thick.

36. In the fall of 1953, a "professor" from Moscow brought a picture of a new type of wing member. The picture was a photographic copy of a publication in an American magazine. The professor asked whether or not such parts had been produced in Bitterfeld and whether a method is known to produce these wing members. After he received a negative answer [redacted] the professor 25X1 discussed the subject with Andriyanoff, probably with the same result. Half a year later, an engineer candidate arrived from Moscow with an order by the ministry for the development of a production method of these wing members. The candidate, who obviously was entirely unfamiliar with forging techniques, probably collected material for his graduation. At first an experimental slab, 400 x 1,200 mm was to be forged.[5] A production method was discussed in various conferences attended by Andriyanoff, Lukonin, Takhanoff, the Moscow candidate [redacted] Tulyankin, Lukonin and the candidate decided 25X1 to apply a method which could be called a step-by-step forging process (Schritt-Schmiedeverfahren). Special tools were constructed for this project. Practical forging tests proved that the method might be quite useful. It was doubted, however, that it would be economical.

37. Questioned during the first conference, the candidate admitted that these rib slabs were wing members and added that they were designed for V-weapons. After successful experiments, these slabs were to be formed to airfoil sections in cold or warm processes. The candidate gave the various dimensions for the slabs with the maximum length being 6 meters and the maximum width 1 or 2 meters.

38. When it was mentioned that there was Soviet literature on 50,000 to 60,000 ton forging presses, [redacted] the original publications would be of 25X1 great interest and might indicate the seriousness of such projects. According to Grinspun, the Soviet industry, status 1953, was capable of producing presses up to 9,000-ton compression. This was probably correct and it was believed that Soviet plants were sufficiently equipped for the molding, casting, forging and also the machining even of such large parts as required for 50,000 to 60,000-ton presses. The Soviet industry was severely hampered by a lack of experienced designers, engineers and skilled plant personnel in carrying out such a project. No inexperienced Soviet expert would risk to take the responsibility connected with such a project. The request for the production of 50,000 to 60,000-ton presses was, for these reasons, considered a Utopian idea of theorists, who were unaware of the problems and difficulties arising with forging presses of that size and which did not occur with 8,000 to 10,000-ton presses. It was well possible, however, that the Soviets published articles on 50,000 to 60,000-ton presses for the purpose of attracting the attention of the West who consequently might start to produce these presses themselves. In that case Moscow would wait for these presses to be completed, and it would try to obtain all the desired designing characteristics, dimensions and all other data either by espionage[6] or primarily from the details published in American technical literature.

Geographical Information on the Kamensk Uralsk Area.

39. Except for the Uas light metal forging and pressing plant no important objects were seen in the Kamensk Uralsk area. Because of the danger involved and also because of the poor climatic conditions - short very hot summers and seven months winter of extreme coldness, snow and mud periods - the area was not inviting. The landscape is hilly. The Izet River, about 100 m wide, flows slowly from west to east, partly through a very deep gorge which extended to the entry into the Kamerka River. The steep gorge of the river has a maximum depth of 20 meters and is formed by almost vertical rocks. The northern bank of the river is steep and extends as far as the end of the S curve downstream of the reservoir near the aluminum works. From downstream toward the reservoir, the southern river bank bec omes gradually flat.

40. The lock which has dammed in the Izet river to a narrow reservoir, about 500 meters long, is located east of the S curve. It was believed that this dam had existed previously; it was heightened in 1951 to raise the water level of the Izet river about 2 to 2.5 meters. This measure had become necessary because the mud from the sewage of the aluminum works had settled during the years and had produced a large bank hampering the water supply of the power plant and the aluminum works. Since it was feared that the held back water might endanger the wooden pillars of the railroad bridge west of the reservoir, the bridge was dismantled before the reservoir was made. This was done during the winter when the ice of the river allowed a better access to the bridge. The railroad line has been interupted ever since.

41. The Uas town and the power plant are located about 10 meters above the water level of the Izet River at the aluminum works; the forging and pressing plant is located about 20 meters above this water level and the highway north of the River is about 20 to 25 above it. The entire area has many gorges and valleys. A densely wooded area, mostly of firs, extends between the Izet River and the highway located in the north as far as the Kamenka River. Grain and potato fields are located north of the highway and in the area west of the Kamenka River.

42. Kamensk Uralsk is a typical old Russian insignificant town consisting mostly of wooded houses and only some few brick buildings. Uas, a district of Kamensk Uralsk, has a population of 35,000 to 40,000. Letters received from there mentioned that Uas has grown considerably since November 1951.

1. Comment. For a location and layout sketch of Kamensk Uralsk with Uas Light Metal Forging and Pressing Plant, see Annex 1. For a layout sketch of the sheet rolling plant and the extrusion plant, see Annex 2. For a layout sketch of the old forge, see Annex 3 and for a sketch of the new forge, see Annex 4. 25X1

2. Comment. For a sketch of the unfinished compressor wheel, see Annex 5. 25X1
For sketches of aircraft spars and so-called collectors, see Annex 6. For sketches of unfinished compressor wheel and guide vanes and frame members, see Annex 7. For sketches of unfinished compressor wheels and a frame member, see Annex 8.

3. Comment. For a sketch of the experimetal propeller blades, see Annex 9. 25X1

4. [redacted] Comment. For conical spars forged at Bitterfeld, see Annex 10.

5. Comment. For rib plates, see Annex 11. 25X1

6. Comment. [redacted] clarify the following points: 25X1

a. The time the individual parts were produced.

b. How long were the individual parts being produced, i.e. how many units were completed. The present report only gives the production capacity.

c. What were the production specifications, and how high the scrap to finished product ratio.

d. Which material was being processed, what sort of thermal treatment was applied.

e. Which information was obtained in personal observation and what was learned in conversations with other persons.

[redacted] 25X1